

Epidemiology Newsletter

Office of Epidemiology

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Utah Influenza Surveillance Summary: 2003-2004 Influenza Season

Summary:

This influenza season came earlier than normal. While influenza can occur any time of year, it is unusual for the season to start before December. This year, cases started in early November. While the number of cases was much higher than usual, this was in part due to a change in the way that cases are reported. A better way of determining the severity of the influenza season is to look at the number of reported hospitalized cases. The circulation of a new strain of influenza A, known as the Fujian strain, characterized this year's influenza season. The vaccine formulated for this year was less effective against this strain than anticipated.

What is influenza?

Influenza is a virus that is usually self-limiting, with recovery occurring within 2-7 days. Symptoms typically include fever, headache, muscle aches, exhaustion, runny nose, sore throat, and cough. While the severity of the illness varies, influenza can be very serious, especially for the very young, very old, and those with certain underlying medical conditions (i.e., heart or lung disease, asthma, diabetes, or HIV). While influenza is rarely the primary cause of death, it is often a contributing factor in deaths. Generally, most cases of influenza occur during the "influenza season".

What is the "influenza season"?

In temperate climates (as in Utah), influenza tends to occur during the colder part of the year. It is interesting to note that this contrasts with the tropics, where outbreaks and sporadic cases may occur during any month, though often they occur during the rainy season. While it is not known why influenza behaves in this manner, it is believed that characteristics of the influenza virus and social behaviors may be contributing factors. During colder months people tend to be indoors and in more crowded conditions than in warmer months. This increases person-to-person contact and could help improve transmission of the influenza virus. Also, the influenza virus seems to survive better in colder temperatures, which could also enhance its transmissibility during winter months.

This pattern is apparent in Utah, where influenza activity historically has peaked between November and March. The term "influenza season" refers to the time period beginning in early October and ending in early May. This is the time during which influenza activity typically appears. Historically, the focus of influenza surveillance has been on this time period, but the potential for pandemic influenza and the emergence of other significant respiratory pathogens (e.g., SARS) outside of the typical influenza season has emphasized the need to expand surveillance to be a year-round activity.

What is surveillance?

Each year, the Utah Department of Health, in conjunction with Utah's 12 Local Health Departments, conducts surveillance for influenza activity. Influenza surveillance includes collecting information on:

- Influenza cases confirmed by laboratory testing,
- Influenza-like illness (ILI) occurring at sentinel clinics, and
- Student absenteeism at sentinel schools throughout the state.

These activities allow public health officials to develop a comprehensive picture of influenza activity in Utah. By comparing Utah data with data from other states, it is possible to understand transmission patterns throughout the nation each season. This allows public health officials to develop strategies to prevent disease transmission, ultimately helping to protect the health of Utah residents.

Why is influenza surveillance important?

Influenza strains tend to stably circulate in the human population over a period of several years. Over this period, many people have exposure to the strains and therefore develop some degree of immune response to them. This resistance presumably decreases influenza morbidity and mortality in a community.

Occasionally, there is a significant change in the influenza strain that circulates in a population. This is known

as a genetic shift. Because there is no immunity in the population to this new strain, there can be more morbidity and mortality than normal. Influenza pandemics are associated with this increase in morbidity and mortality. An infamous example of a pandemic is the 1918 influenza pandemic, where 550,000 deaths in the United States and 30 million deaths worldwide were attributed to influenza.

Pandemic influenza strains affecting humans can arise when strains associated with animal disease “jump species”, becoming virulent to humans, and acquiring the ability to be transmitted person-to-person. A recent example of this phenomenon occurred in Hong Kong in 1997, when a strain of avian influenza type A (H5N1) was recovered from humans and person-to-person transmission of that strain was documented. Fortunately, community-wide outbreaks did not occur as a result of this event, but the potential highlighted the need to be vigilant in identifying and containing these cases to stave off another pandemic.

Surveillance is needed to identify and characterize influenza cases and circulating influenza strains, and then develop effective public health intervention strategies.

How is surveillance conducted in Utah?

The number of influenza cases reported to public health accounts for a small percent of people who actually have influenza. To be reported, a patient needs to visit their clinician and then be tested for the presence of influenza. The influenza test must indicate that the patient is infected. This laboratory testing provides important information about influenza types that are circulating during a given influenza season. Patients who have negative influenza tests, who visit their clinician and are not tested, or who do not visit their doctor are never counted as cases.

Testing practices vary within the community. Some clinicians may test all of their patients, and others may test very few. As a result, the number of cases, by itself, is not a good determination of the burden of the disease in the population. That is why surveillance is composed of three parameters: cases, influenza-like illness (ILI), and school absenteeism.

Each year, sentinel clinic sites are asked to participate in ILI surveillance. ILI surveillance has been shown to be a good surrogate measure of the extent of influenza activity in the community, and is especially helpful because it does not rely on laboratory testing. This means that it is not affected by differences in testing practices within the medical community that may affect traditional influenza case finding and reporting. ILI information is more timely than that derived from traditional influenza case reporting.

Clinicians at participating clinics are asked to provide weekly counts of patients that have been seen with ILI (defined as patients with a fever of 100° F or greater, plus cough and/or sore throat). Clinicians are asked to provide counts of patients by age group, and also to provide total counts of patients seen at the clinic each week. This information allows monitoring of trends within age groups, allowing for detection of unusual or unexpected patterns, and also enables epidemiologists to look at the rate of people with influenza-like illness rather than just the actual number. Rates are useful in determining if the proportion of respiratory illness seen in clinics is unusual and allows for better characterization of disease patterns in the community. During the 2003-2004 influenza season, 38 sentinel clinics in Utah participated in ILI surveillance. Beginning with the 2003-2004 season, ILI surveillance activities are transitioning to being year-round.

Influenza surveillance is also supplemented by absenteeism information from schools throughout Utah. Individual schools and some school districts are asked to provide weekly information on the number of students absent for any reason during the influenza season. They also provide information on the total number of students enrolled for the year so that weekly absenteeism rates can be derived. Absenteeism is often an important indicator of the onset of the influenza season, as increased absenteeism tends to correlate well with increased ILI reports and increased influenza case reports. However, absenteeism is influenced by holidays and breaks, and may be influenced by other events unrelated to influenza, so information must be interpreted with caution. During the 2003-2004 influenza season, 50 schools and school districts in Utah participated in absenteeism surveillance.

Surveillance results for the 2003-2004 influenza season

During the 2003-2004 influenza season, 6,340 cases of influenza were reported to the Utah Department of Health. This is substantially higher than the number of cases reported during the 2002-2003 season (1,053 cases). There

are several possible explanations that could account for this increase:

- More people opted to visit their physician for influenza-like illness.
- More clinicians and hospital emergency rooms were testing for the presence of influenza.

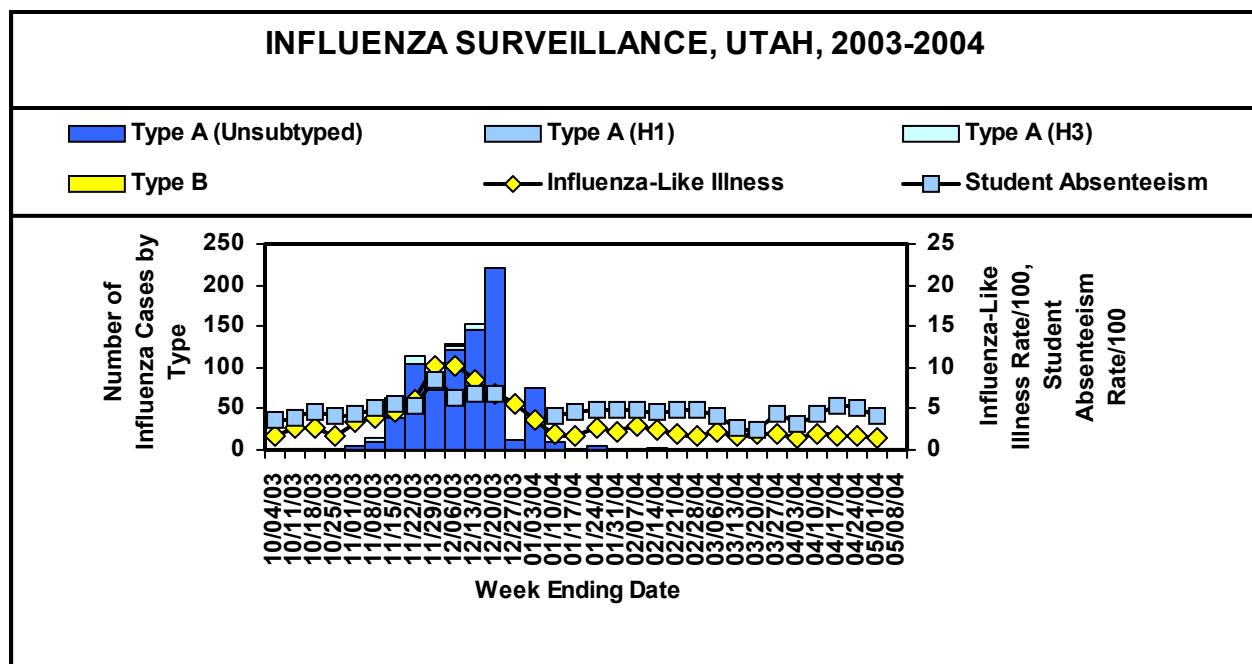
One variable that impacted the number of documented cases was a change in the reporting of cases. 2003-2004 was the first season that Utah included patients with a positive rapid influenza test as cases. In prior years, these were not considered to be influenza cases. Because rapid laboratory information is critical to influenza treatment, more community testing has been performed using rapid tests. This season, most of the reported cases were diagnosed by rapid test (5,437 cases), which would account for a large part of the increase in reported cases.

Many rapid influenza tests do not differentiate influenza type. Of those where the influenza type could be determined, almost all of the cases were type A (900 cases) and only 3 cases of type B influenza were reported. The number of laboratory-confirmed cases peaked this season during the week ending December 20, 2003, which was much earlier in the season than last year, when reported cases peaked the week ending March 1, 2003.

Absenteeism rates and ILI numbers peaked several weeks earlier than reported influenza cases this season. This is not unexpected, since there is a delay in reporting laboratory-confirmed cases. During the week ending November 29, 2003 the number of reported ILIs peaked when 10.2% of patient visits to sentinel clinics were reported to be due to influenza-like illness. Absenteeism also peaked the week ending November 29, 2003, when 8.4% of students were reported to be absent from school. Both peaks were substantially higher than the 2002-2003 season peaks, when the highest proportion of visits due to influenza-like illness was 4.7% and the highest proportion of students absent from school was 6.0%. Absenteeism and ILI data also provide evidence that this year had an earlier peak of influenza activity than last year, as both indicators had a significant peak the week ending February 22, 2003 during the 2002-2003 season. Interestingly, absenteeism peaked both seasons during the week of Thanksgiving, illustrating the influence that a holiday (and presumably absences related to holiday vacations) may have on this indicator. In interpreting absenteeism and ILI data, it is important to note that they are both non-specific indicators of influenza. It is difficult to determine whether absenteeism and ILI are due to influenza, RSV, or another respiratory virus, especially in the absence of increased influenza case counts or increased hospitalizations due to influenza.

Figure 1 portrays influenza trends for the 2003-2004 season for the indicators mentioned above, and also depicts reported influenza cases by type. For this figure, cases diagnosed by rapid test are not displayed. Additional graphs illustrating trends for these indicators individually for 2003-2004 as compared to 2002-2003 are available at http://health.utah.gov/els/flu/flu_week.htm.

Figure 1: Influenza surveillance indicators for Utah, 2003-2004



Questions?

For more information on influenza or to participate in ILI or absenteeism surveillance, please contact your local health department or the Utah Department of Health Communicable Disease Epidemiology Program at 538-6191.

Additional information is available from:

- The Utah Department of Health: <http://health.utah.gov/els/flu/index.html>
- The Centers for Disease Control and Prevention: <http://www.cdc.gov/ncidod/diseases/flu/fluivirus.htm>

References:

J Chin (ed), Control of Communicable Diseases Manual, 17th edition, American Public Health Association,

The Cumulative Number of Suspect and Confirmed Cases for 20 Selected Diseases, Reported by Utah Health Districts, April 2004.																				
Health District	Campylobacteriosis	<i>E. coli</i> 0157:H7	<i>E. coli non-0157:H7 STEC</i>	Giardiasis	<i>H. influenzae</i> (Invasive)	Hepatitis A (Acute Only)	Hepatitis B (Acute Only)	Hepatitis C (Acute Only)	Influenza	Meningitis (Aseptic)	Meningitis (Bacterial)	Meningitis (Viral)	Meningococcemia	Pertussis	Rabies (Animal)	Salmonellosis	SARS	Shigellosis	West Nile Encephalitis	West Nile Infection
Bear River	7	1		1	1											2				
Central	1															2				
Davis	1	1		1												4				
Salt Lake	13			9		1			24			1	1	2		8				
Southeast	1																			
Southwest				1	1	1							1							
Summit	1															1				
Tooele																1				
Tricounty					1											1				
Utah County	4			3												2		2		
Wasatch				1																
Weber-Morgan	1	1		3										1						
April 2004	29	3	0	19	3	2	0	0	24	0	0	1	2	3	0	21	0	2	0	0
April 2003	14	1	0	14	2	4	5	0	85	0	0	4	0	8	0	21	7	7	0	0
2004 To Date	80	3	5	76	7	18	20	0	436	0	0	12	3	24	0	72	0	13	0	0
2003 To Date	45	3	4	83	7	11	14	0	659	1	0	12	0	29	0	56	7	15	0	0

Number of Suspect and Confirmed Cases, by Disease, Reported to the
Office of Epidemiology, April 2003 and April 2004

